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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,036

10/25/2005

Toru Okabe

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EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

04/24/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/517,036	<b>Applicant(s)</b> OKABE ET AL.	
	<b>Examiner</b> WEIPING ZHU	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6 and 8-18 is/are pending in the application.  
     4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8-11 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 14, 2008 has been entered.

### ***Status of Claims***

2. Claims 1-4, 6, 8-11 and 16-18 are currently under examination wherein claim 1 has been amended and claims 16-18 have been newly added in applicant's amendment filed on March 14, 2008. Claims 5 and 7 have been cancelled in the same amendment.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6, 8-11 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Löffelholz et al. (US 6,136,062) in view of Takahar et al. (US 5,417,917) and further in view of Kamei et al. (US 6,015,527).

With respect to claim 1, Löffelholz et al. ('062) discloses a method for producing niobium and/or tantalum powders by reducing the metal compounds with an active

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metal (e.g. alkaline earth metals and/or rare earth metals) as a reducing agent (col. 1, lines 34-38).

Löffelholz et al. ('062) does not teach the molding step features as claimed.

Takahar et al. ('917) discloses a method for producing a metallic porous membrane comprising: mixing a powdery metal compound with a binder; molding the mixture to a desired shape; and sintering the compact to produce a sintered metal compound compact followed by a reducing step to reduce the compact to a metallic porous membrane by a reducing gas (col. 3, lines 46-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to mold the mixture of the particles to a desired shape and sinter it to a sintered compact and reduce the compact by a reducing agent in a gaseous form as disclosed by Takahar et al. ('917) in the process of Löffelholz et al. ('062) in order to improve the quality of the final product and be well feasible to the industrial practice as disclosed by Takahar et al. ('917) (col. 4, lines 1-7).

Löffelholz et al. ('062) in view of Takahar et al. ('917) does not teach the mixture comprises a reaction agent as claimed.

Kamei et al. ('527) disclose a method for producing reduced iron comprising mixing metal compound, a powdery reductant (i.e. a reaction agent as claimed) and a binder and compacting the mixture in a sheet-like shape (col. 8, lines 29-34 and 62-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to mix a metal compound, a reaction agent and a binder together for molding as disclosed by Kamei et al. ('527) in the process of Löffelholz et al. ('062) in

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view of Takahar et al. ('917) in order to produce highly uniform and pure titanium and zirconium alloy ingots efficiently and economically as disclosed by Kamei et al. ('527) (col. 8, lines 29-34 and 62-65).

Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) does not specify the claimed features in the reducing step. However, the claimed features would have been obvious to one of ordinary skill in the art, because Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) would reduce the sintered compact of desired form by a reducing agent in a gaseous form (i.e. the vapor of the active metal as claimed).

Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) does not specify the reaction agent as claimed. However, it would have been obvious to one of ordinary skill in the art to use a compound (e.g. an oxide) of an active metal select from calcium and magnesium (Löffelholz et al. ('062), col. 1, lines 62-65) as the reaction agent as disclosed by Kamei et al. ('527) (col. 8, lines 29-34 and 62-65).

With respect to claims 2, 3, 6, 8, 9 and 11, Löffelholz et al. ('062) discloses that niobium oxide and tantalum oxide can be reduced (col. 1, lines 60-61); the preferred reducing metals are magnesium, calcium, lanthanum and cerium, magnesium is particularly preferred (col. 1, lines 62-65); the reducing temperature is between 750 and 850° C (col. 1, lines 49-59), which is within the claimed reducing temperature, a prima facie case of obviousness exists, MPEP 2144.05 I; the reduction product is freed from

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alkaline earth oxides and /or rare earth oxides formed in the reduction and from excess alkaline earth metal and/or rare earth metal by acid washing (col. 1, lines 42-47).

With respect to claim 10, Takahar et al. ('917) discloses the mixture is molded to a shape of 70 mm in diameter and about 2 mm thick (col. 1, lines 48-50), which is within the claimed range of non longer than 10 mm.

With respect to claim 16, the reason for the rejection of the claimed reaction agent feature in claim 1 as discussed above is further applied properly.

With respect to claim 17, Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) does not specify the mixing ratio of the reaction agent as claimed. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. In re Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, mixing ratio of the reaction agent is a result-effective variables, because it would directly affect the reaction of the reduction. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the mixing ratio of the reaction agent of Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) for the desired reduction results. See MPEP 2144.05 II.

With respect to claim 18, the reason for the rejection of the claimed feature in claim 10 as discussed above is further applied properly. Furthermore, it is well settled that merely changing the size of an article is not a matter of invention. See MPEP 2144.04 IV.

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4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) as applied to claim 1 above and further in view of Honma et al. (US 3,839,020).

With respect to claim 4, Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) does not teach the claimed features.

Honma et al. ('020) discloses a method for reducing zirconium compounds by contacting an active metal (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute niobium oxide with a zirconium compound to be reduced by contacting an active metal as disclosed by Honma et al. ('020) in the process of Löffelholz et al. ('062) in view of Takahar et al. ('917) and further in view of Kamei et al. ('527) in order to produce highly uniform and pure zirconium alloy ingots efficiently and economically as disclosed by Honma et al. ('020) (col. 2, lines 11-20), when it is desired to form a zirconium compact.

### ***Response to Arguments***

5. The applicant's arguments filed on March 14, 2008 have been fully considered but they are not persuasive.

First, the applicant argues that Löffelholz et al. ('062), Takahar et al. ('917) Honma et al. ('020) and Kamei et al. ('527) are significantly different in their objectives, therefore, the motivations to combine them are lacking. In response, the examiner notes that all these references teach reducing metal oxides to desired metals as claimed. The

motivations as stated in the Office action dated February 5, 2007 are proper and maintained in this Office action.

Second, the applicant argues that Löffelholz et al. ('062) does not teach the claimed features in the reducing step in claim 1. In response, see the rejection of the claimed features in the paragraph 3 above.

Third, the applicant argues that the powdery solid reductants disclosed by Kamei et al. ('527) are entirely different from the reaction agents recited in claim 1. In response, see the rejection of the claimed reaction agent features in claim 1 in the paragraph 3 above and examiner's response to applicant's fifth argument in the Office action dated July 19, 2007.

### ***Conclusion***

6. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.




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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

WZ

4/19/2008

<div>Application Number</div> <div></div>	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/517,036	OKABE ET AL.	
	Examiner	Art Unit	
	WEIPING ZHU	1793	